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(doc. date whenfinal)

COORDINATION

DRAFT (PROPOSED)

PURCHASE DESCRIPTION

TELELOGISTICS FOR US ARMY WATERCRAFT

This purchase description is approved for use by the U.S. Army Tank-automotive and Armaments Command, Department of the Army and is available for use by all Departments and Agencies of the Department of Defense.

1. Scope.

The purpose of Telelogistics for US Army Watercraft (TELELOG) is to provide an open-architecture, integrated watercraft system for automated management and support of craft logistics functions, and to enable craft system monitoring, troubleshooting and maintenance on board the Logistics Support Vessel (LSV), Landing Craft Utility 2000 Class (LCU-2000), and Large Tug (LT). TELELOG will monitor watercraft main and auxiliary systems, store and disseminate data, conduct failure prognostics, allow seamless material requisitions and transmit/receive logistics information to and from the watercraft. TELELOG will interface with current watercraft systems and comply with U.S. Army procedures as well as support and interface with U.S. Army logistics programs and systems such as STAMIS, GCSS-A, and GCCS-M. TELELOG shall comply with the requirements established by the Army Maintenance Management System (TAMMS).

NOTE: The system requirements may be modified based on industry input.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Tank-automotive and Armaments Command, ATTN: **AMSTA-LC-CJEB**, 6501 E 11 Mile Road, Warren, MI 48397-5000, by letter or the "T-log" mailbox, link through the home page.

FSC 58GP

DISTRIBUTION STATEMENT A. Approved for public release.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this purchase description. This section does not include documents in other sections of this purchase description or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirement documents cited in sections 3 and 4 of this purchase description, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this purchase description to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

DEPARTMENT OF DEFENSE

STANDARDS

DII-COE	- Defense Information Infrastructure Common Operating Environment
JTA-Army V 6.5	- Joint Technical Architecture - Army
MIL-STD-461	- Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment.
MIL-STD-464	- Interface Standard for Electromagnetic Environmental Effects Requirements for Systems
MIL-STD-810	- Environmental Engineering Considerations and Laboratory Tests
MIL-STD-1472	- Department of Defense Design Criteria Standard
MIL-STD-3008	- Interactive Electronic Technical Manual (IETM) Technical Data Requirements to Support the Global Combat Support System – Army(GCSS-A)
MIL-STD-40051	- General Style Format of US Army Work Package TM

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this purchase description to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

US ARMY PAMPHLETS

- | | |
|----------------|---|
| AR 750-1 | - Functional Users Manual for The Army Maintenance Management System (TAMMS) |
| DA Pam 611-21 | - Military Occupational Classification and Structure. |
| DA Pam 738-750 | - Functional Users Manual for The Army Maintenance Management System (TAMMS). |
| DA Pam 750-35 | - Army Materiel Maintenance Policy and Retail Maintenance Operations |

(Copies are available from the US Army Tank-automotive and Armaments Command, AMSTA-LC-CJ, Warren, MI 48397-5000. Some are also available on-line at <http://www.usapa.army.mil>.)

US ARMY TECHNICAL MANUALS

- | | |
|-------------------|----------------------------------|
| TM 55-xxxx-xxx-xx | - Manual for LSV |
| TM 55-xxxx-xxx-xx | - Manual for LCU 2000. |
| TM 55-xxxx-xxx-xx | - Manual for 128 Foot Large Tug. |

(Copies are available from the US Army Tank-automotive and Armaments Command, AMSTA-LC-CJ, Warren, MI 48397-5000. Some are also available on-line at <http://www.usapa.army.mil>.)

DRAWINGS

- | | |
|-----------|---|
| 3229E1600 | - 128 Foot Large Tug, Booklet of General Notes |
| 3228E0907 | - LCU 2000, Comm & Electronic Equipment Arrangement |
| E-1 | - LSV 4, Electrical One Line Drawing |

(Copies of these drawings are available from the US Army Tank-automotive and Armaments Command, AMSTA-LC-CJ, Warren, MI 48397-5000.)

2.3 Non-Government publications. The following document form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the document, which are DoD adopted, are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issue of the documents cited in the solicitation (see 6.2).

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 45	Recommended Practices for Electric Installations on Shipboard (DoD Adopted)
IEEE 802.3	Edition Information Technology – Telecommunications and Information Exchange Between Systems
IEEE 802.11a	Information technology – Telecommunication and Information Exchange between Systems
IEEE 802.11b	Supplement to Information technology – Telecommunication and Information Exchange between Systems

(Application for copies should be addressed to the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331. add website)

UNDERWRITERS LABORATORY, INCORPORATED (UL)

UL 1449	- Standard for Safety for Voltage Transient Surge Suppressors
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(Application for copies should be addressed to Underwriters Laboratory, Inc., 1285 Walt Whitman Road Melville, NY 11747-3081)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Technical Test and Evaluation. TELELOG shall be subjected to testing and inspection in accordance with 4.0.

3.2 Design, materials, and manufacturing processes. The contractor shall verify that the materials used in the system components are as identified and shall meet all of the operational and environmental requirements specified. The materials shall be of sufficient durability to meet all the requirements as specified herein. No material shall have an adverse effect on the health of personnel when used for its intended purposes. Toxic chemicals, hazardous substances, or ozone depleting chemicals (ODC) shall not be used. When utilized, gaskets shall not be of a cork or cork/rubber combination material.

3.2.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.2.2 Deterioration prevention and control. The manufacturer shall select materials capable of meeting marine operational and environmental requirements specified herein. The system components shall be fabricated from marine (ABS /ASTM) compatible materials, inherently corrosion resistant or treated to provide against corrosion and deterioration.

3.2.3 Dissimilar metals. Dissimilar metals shall not be used in direct contact with each other except to protect against galvanic corrosion.

3.3 Operating requirements. TELELOG shall be Joint Technical Architecture, Army (JTA-A) and Defense Information Infrastructure Common Operating Environment (DII-COE) compliant. TELELOG shall be interoperable with U.S. Army watercraft and logistic systems (Standard Army Management Information Systems - STAMIS). Forms and reports generated by TELELOG shall be in accordance with U.S. Army maintenance and supply regulations and procedures DA-PAM-210 and DA-PAM-738-750. Failure of the TELELOG system shall not affect vessel mission readiness or operation of the equipment/systems being monitored.

3.3.1 Monitoring requirements. TELELOG shall monitor watercraft main and auxiliary systems indicated in the types and quantities outlined in Tables 1 - 3. Monitoring shall include operational as well as static monitoring to determine failures, expected failures, and indicate normal operation of onboard equipment and systems. System monitoring shall not affect watercraft operations in any way. TELELOG is not intended to replace but enhance current onboard monitoring systems.

3.3.1.1 Engine Efficiency Associates (EEA). The EEA system shall be removed in its entirety from all LCU 2000 class vessels and replaced with the TELELOG system. The EEA system is identified on the EEA drawing entitled "Machinery Plant Monitoring and Alarm System", drawing number 01-10200-000 Rev B, FSCM 73396.

3.3.1.2 Existing Sensors. All existing sensors shall be replaced with modern components that meet form, fit, and function and be compatible with TELELOG equipment. When a sensor being replaced degrades the operation of an existing gauge(s), that gauge(s) shall be replaced with a compatible gauge and installed in the previous location.

3.3.1.3 New Sensors. When sensors are required for new applications in accordance with tables 1-3, new sensors shall be installed and shall not degrade the performance of any system.

3.3.1.4 Built In Test. TELELOG shall have embedded self-diagnostic capabilities to facilitate its own troubleshooting and maintenance.

3.3.2 Fault Isolation. TELELOG shall perform diagnostics on collected data to recommend maintenance actions and predict potential equipment failures. Sensor readings shall be displayed to indicate normal and substandard performance in monitored systems.

3.3.2.1 Data Utilization. TELELOG shall receive, store, disseminate, and provide data to operators and maintainers and from various sources, to include sensors, equipment, systems, logistics, operators and maintainers. Data shall include raw stored and real-time and processed data. Machinery operating condition data shall be collected and utilized for trend analysis to support Condition Based Maintenance (CBM), and for diagnostics/prognostics modeling to forecast watercraft equipment/system failures.

3.3.2.1.1 Prognostics. Prognostics shall be performed to convert unscheduled maintenance actions into a more scheduled or anticipatory approach. This system shall be a digitally oriented information-based diagnostics/prognostics system that will permit maintainers to troubleshoot hardware and software on weapon systems and equipment rapidly and accurately.

3.3.2.2 Alarms. Existing visual and audible alarms shall be retained and integrated into the TELELOG system. In addition, the TELELOG system shall provide visual and audible alarms at the TELELOG workstations.

3.3.2.2.1 Faults. Abnormal operating parameters, impending maintenance requirements or imminent system failures shall be indicated in accordance with MIL-STD-1472 sections 5.2 and 5.3, respectively. Abnormal operating parameters shall be obtained from the corresponding equipment Technical Manuals and commercial manufacturing data. The types of alarms and locations are indicated in tables 1 through 3.

3.3.2.2.2 Visual Alarms. Visual alarms shall be displayed on all TELELOG workstations on the main system-monitoring screen. The alarm shall consist of at least two levels of alarm with user reprogrammable thresholds. Access to programming screens shall be controlled with limited access rights and protected from unauthorized alterations to protect the equipment from destruction.

3.3.2.2.3 Audio Alarms. TELELOG shall utilize existing audio alarms in the Engineering Operating Station, EOS, and on the bridge for all monitoring systems.

3.3.2.3 Troubleshooting. The system shall indicate faults by system, equipment, and to the lowest component possible.

Industry question: Based on sensor types and allocations indicated in tables 1 through 3 what is the lowest level of fault isolation capable? What type and quantity of sensors should be added to monitor which systems?

3.3.2.4 Technical Documentation Accessibility. When system faults are identified either by TELELOG or the user, the system shall highlight the appropriate technical documentation, which is best suited to facilitate corrective action. When more than one technical document can be used for troubleshooting, the technical documents shall be listed in descending order of significance. The operator shall be able to display technical documentation with one mouse click.

3.3.2.4.1 Interactive Electronic Technical Manuals (IETM). All technical manuals of systems being monitored by TELELOG shall be converted into a Level 5 IETM in accordance with MIL-STD-40051 and updated to include TELELOG system.

3.3.2.4.2 Schematic, diagrams, flow charts. All schematics, diagrams, and flow charts listed of systems being monitored by TELELOG shall be converted into electronic format and incorporated into the TELELOG system.

3.3.2.4.3 Provisioning Data. All provisioning data of systems being monitored by TELELOG will be verified for accuracy and converted into electronic format for utilization with in TELELOG.

3.3.3 Workstation Types and Distribution. TELELOG access points and workstations shall be in accordance with Tables 4 and 5. All information and shall be accessible from any of these access points and workstations provided the user has the proper authority.

3.3.3.1 Data Display. Information shall be displayed on workstations throughout the watercraft in accordance with Table 5. The graphical user interface shall be in accordance with paragraph 3.4.3.1 and manufacturer's recommendations for equipment being monitored.

3.3.3.2 Desk Top Workstation: A desk top workstation shall consist of a industrial grade computer, Monitor, Keyboard, and mouse. The desk top workstation shall have the capability of storing and accessing data utilizing 3.5 inch floppy and compact disk. The total overall size shall not exceed 9 cubic feet and shall not weight over 80 pounds.

Minimum Requirements:

- a) CPU- Pentium 4 at 2.26GHz
- b) High resolution flat screen monitor - 17" Digital Flat Panel, Optimal Resolution 1280x1024 at 60Hz
- c) Hard Drive - 120GB
- d) RAM - 512MB High-speed, high-capacity
- e) Warranties – Commercial manufacturer's hardware and software warranties
- f) Keyboard and interactive pointer
- g) Printer – 800 dpi capable of printing 8.5" by 11" and 11" by 17" paper

3.3.3.3 Laptop Workstation: A laptop workstation shall consist of a industrial grade computer with monitor, keyboard, and pointing device. The desk top workstation shall have the capability of storing and accessing data utilizing 3.5 inch floppy, compact disk, and LAN access when the docking station is utilized. In addition, a separate monitor, keyboard, and mouse shall be provided as in section 3.3.3.2, which can be used when the laptop is docked. The total overall size docked shall not exceed 9 cubic feet and shall not weight over 30 pounds. The total overall size undocked shall not exceed 2 cubic feet (display closed) and shall not weight over 10 pounds.

3.3.3.4 Wireless Laptop Workstation. A laptop workstation shall consist of an industrial grade computer with monitor, keyboard, and pointing device. The desk top workstation shall have the capability of storing and accessing data utilizing 3.5 inch floppy, compact disk, and LAN accessibility with both a network interface card and/or a wireless connection. The wireless interface shall be compliant with JTA-Army and accessible within the engineering spaces as well as the galley as indicated in Table 4. The total overall size shall not exceed 2.3 cubic feet (display closed) and shall not weight over 9 pounds and shall be able to withstand a 5-foot drop onto a steel deck.

Minimum Requirements:

- a) CPU- Pentium 3 at 850MHz
- b) High resolution flat screen monitor – 13.4” Active Matrix Color LCD Optimal Resolution 1024 x 768 at 60Hz
- c) Hard Drive - 30GB
- d) RAM - 384MB High-speed, high-capacity
- e) Warranties – Commercial manufacturer’s hardware and software warranties
- f) Keyboard and interactive pointer

3.3.4 Local Area Network. The onboard Local Area Network, LAN, must be capable of transporting information to/from the various computers connected to the TELELOG system. The points of LAN access are indicated in Table 4. The LAN architecture topology shall not have single point of failures and shall be compliant with the JTA-Army.

3.3.5 Data Storage and Retrieval. This system shall be capable of technical documentation storage and retrieval and have a minimum of 500 Gigabytes of storage capacity over and above the TELELOG requirement. The information stored and retrieved shall be accessible to the workstations outlined in Table 5 and accessible using the LAN at the points outlined in Table 4. An integrated capability to archive and restore TELELOG system operating software and data files shall be provided. The TELELOG shall have the capability to store collected data over a six month period. Data Storage and retrieval hardware shall be bulkhead mounted and not exceed 150 pounds in weight and 40 cubic feet in volume.

3.3.6 Inventory Monitoring. On board inventory of spares, material, and consumable will be maintained within TELELOG. When onboard spares and material

levels drop below required stocking levels (reorder point fault) the deficiency will be highlighted for input into the material requisition process. Onboard inventory levels are outlined in the referenced manuals for LSV, LCU 2000, LT.

3.3.6.1 Inventory Updates. The initial loading and updates to inventory levels will be entered manually by users with either keyboard entrees or barcode readers.

3.3.6.2 BarCoding. A barcode reader and writer shall be provided. Hand held device with docking station for download into the engineering workstation.

3.3.7 Material Requisitioning. TELELOG shall interface with current watercraft systems and comply with U.S. Army procedures as well as support and interface with U.S. Army logistics programs and systems such as STAMIS, GCSS-A, and GCCS-M to allow seamless material requisitions and transmit/receive logistics information to and from the watercraft. TELELOG will comply with the requirements established by the Army Maintenance Management System (TAMMS).

3.3.7.1 Requisition Generation. The system shall automatically generate material requisition documentation and facilitate electronic submittal to the appropriate levels of approval. Requisitioning documentation and approvals shall be compliant with ULLS-G and GCSS-A.

3.4 Interface requirements. TELELOG shall be capable of information reception/transmission to and from US Army watercraft (LSV, LCU 2000, and LT) and shore stations worldwide utilizing existing Command and Control, Computers, Communication and Intelligence (C4I) infrastructure. This information must interface with STAMIS and have the capability to be upgraded to interface with GCSS-Army and GCCS-M. Interface with U.S. Army logistics systems must be seamless to the onboard operator.

3.4.1 C4I System Interface. TELELOG will interface into the "SALTS" computer located in the C4I System equipment rack. This interface will allow TELELOG files and information to be transmitted off the watercraft utilizing the onboard C4I suite.

3.4.2 Human Computer Interface. The Human Computer Interface (HCI) shall provide a point-and-click user interface to the TELELOG functional modules and be compliant with the JTA-Army.

3.4.2.1 Graphical User Interface. Information, terminology and the corresponding graphic user interface (GUI) must be easily readable and understood by watercraft personnel and shall be compliant with the JTA-Army. The system must have the capability to forward, store, and print documentation. The HCI shall replicate existing forms and report formats utilized in logistics actions, both displayed on screen and in hard copy. HCI hardware shall fit within the existing space/weight/power

constraints of current watercraft monitoring systems. The HCI shall include a software-editing tool to allow parameter adjustments and system upgrades by authorized personnel to suit changes to existing watercraft systems. The system shall support use of interactive troubleshooting results to initiate related logistics action(s) with one command by an individual user.

3.5 Support and ownership requirements.

3.5.1 Power. When onboard power is used, a minimum power factor of .80 lagging is required for Alternating Current (AC) systems and each unit shall be protected from power anomalies introduced by other onboard equipment or external phenomenon. No transients or power anomalies shall be introduced into the onboard power system.

3.5.1.1 Uninterruptible Power. All new equipment shall have the capability of full system operation during onboard power failures for a minimum of 2 hours.

3.5.1.2 Transient Voltage Surge Suppression. When AC power is required, the power circuit shall be protected with a parallel device and be listed to UL 1449.

3.5.2 Electromagnetic Interference. All new equipment introduced onboard shall not emit or be susceptible to electromagnetic interference (EMI) into the other onboard systems or equipment and be compliant with MIL-STD-464.

3.5.3 Servicing, operation, and maintenance. The TELELOG support concept shall use the standard US Army maintenance concept, and shall conform to the requirements and guidance according to AR 750-1, DA Pam 750-35, and DA Pam 738-750. The TELELOG shall require as few special tools or test equipment as possible, and the maximum utilization of existing DoD and US Army tools and support equipment is required. If Test, Measurement, and Diagnostic Equipment (TMDE) are required, it shall be subject to Government approval.

3.5.4 Special Tools and Test Measurement and Diagnostic Equipment (TMDE). All Special tools, and test equipment required to adjust, maintain, and repair the system shall be provided. The contractor shall identify all special tools required to service or repair the TELELOG components and incorporate the special tools and test equipment lists into the TELELOG maintenance manual.

3.5.5 System Readiness. System readiness shall meet the requirements called out in AR 750-1, DA Pam 750-35, and DA Pam 738-750.

3.5.6 Mean Time to Repair. The mean time to repair, MTTR, shall not exceed 45 minutes for critical failures. MTTR will be calculated from the point when diagnostics/troubleshooting procedures are being performed to determine the cause of failure until the repair is completed.

3.5.6.1 Problem Reports. Failures will be classified into two types: Critical and non-critical. Critical failures cause the system or a portion of system (equipment) to fail to operate. Such failures include but are not limited to hardware failures (such as displays, drives, power supplies, cabling, etc.) and software failures (such as operating system, I/O failures, etc.). Non-critical failures do not cause the system to fail to operate. Generally, non-critical failures can be worked around while the system is still operating or even may cause the system or some equipment to be re-booted.

3.5.7 New Equipment Training. Training shall include instructional and hands-on training for operators, maintainers, and Instructor/Key Personnel Training (IKPT). All training and material shall be provided on-site and immediately preceding installation.

3.5.8 Embedded Training. Embedded performance based, hands-on training in electronic format shall be provided within the TELELOG system. Training will include operator and maintenance training which clearly illustrates the proper methods of operation and maintenance to allow onboard personnel to fully utilize the capabilities of the TELELOG system. Training must be structured and easily understood by onboard personnel.

3.5.9 Material. Materials used to fabricate any structure, systems, and equipment shall have material properties and behavior suitable for the manufacturing and installation processes selected, in-service environment, and function performed. Selected materials shall support the ship's required service life without degrading the performance of ship structure, systems, and equipment during the specified ship operational profile. Asbestos, polychlorinated biphenyl (PCB), and lead paint shall not be used. Mercury shall not be used in applications where a functionally equivalent substitute is available. Direct contact of electrolytically dissimilar metals is prohibited unless electrolytic corrosion precautions are used. Protective covers shall be provided as required to protect exposed equipment when not in use. The covers shall be stenciled to indicate their use.

3.5.10 Human Engineering. Human engineering principles and design standards shall be applied in the design, system and equipment selection, systems integration, hardware, software, architectural aspects, and human-machine interfaces. Operation, maintenance, and repair activities and procedures shall accommodate a wide range of individual physical capability. Crewing will be mixed gender. Accommodation of the needs of the 5th percentile female as well as 95th percentile male shall be incorporated as defined in MIL-STD-1472. Emphasis shall be given but not limited to general requirements, control and display integration, controls, labeling, maintainability, anthropometry, and hazard and safety criteria, as applicable.

3.5.11 Information Security. Information within this system shall be protected from unauthorized modifications and utilization and shall be compliant with the JTA-Army. Users shall be allowed to login and access this system, modules and databases based on levels of authority.

3.6 Marine Environment. All new equipment and material utilized shall be capable of surviving in a maritime environment. This includes shock, vibration, moisture, temperature, and galvanic or similar type of reactions. The system and each of its components shall be capable of being stored, maintained, and operated under the following environmental conditions. In addition, all equipment exposed to weather shall be protected against severe weather conditions and exposure to the marine elements.

3.6.1 Operational temperature. The system shall operate as specified at any ambient temperature from 0°F to +100°F without modifications or the use of kits.

3.6.2 Humidity. The system shall perform as specified under relative humidity of up to 88%.

3.6.3 Electromagnetic interference. The electromagnetic radiated interference and susceptibility characteristics of the system shall not exceed the limits specified in MIL-STD-461 for Army equipment or systems.

3.6.4 High-altitude electromagnetic pulse. The system shall not exhibit any malfunction or degradation of performance when subjected to RS 105 per MIL-STD-461. Reference High-altitude electromagnetic pulse (HEMP) environment in accordance with MIL-STD-464.

3.6.5 Personnel integration (MANPRINT) requirements. The system shall be operable and maintainable by the following military-trained personnel, as designated by DA Pam 611-21:

- a. Military Occupational Specialty (MOS) 88L (Watercraft Engineer).
- b. MOS 88K (Watercraft Operator).

4. VERIFICATION (**Verification requirements will be added later.**)

5. PACKAGING

5.1 Packaging. Preservation, packing and marking shall be as specified in the contract or purchase order.

6. NOTES

6.1 Intended use. This specification is intended for use in the development and installation of the TELELOG system onboard the U.S. Army LSV 1 through 6, LCU 2001 through 2035, and LT 801 through 806 vessels.

6.2 Definitions.

6.2.1 Basic Issue Items (BII). BII is defined as any support items that the operator of the system will require in order to put in operation, operate, and to perform emergency repairs.

6.2.2 Commercial Off The Shelf (COTS). Commercial off the shelf (COTS) refers to products, which are readily available for procurement and are generally leased, licensed, and sold to the general public.

6.2.3 Electrical Sensor. An electrical sensor uses electrical signals to drive monitoring devices.

6.2.4 Mechanical Sensor. A mechanical sensor uses fluid or other mechanical mechanisms to drive monitoring devices.

6.2.5 Defense Information Infrastructure Common Operating Environment (DII-COE).

The Defense Information Infrastructure (DII) Common Operating Environment (COE) was developed in 1993. DII COE was designed to eliminate duplication of development (such as mapping, track management, and communications interfaces) and eliminate design incompatibility among Department of Defense systems.

6.2.6 Non-Developmental Item (NDI). A non-developmental item is a component of a system, which is generally COTS, and can be readily used and/or applied with little to no modifications.

6.2.7 Open Architecture. Open systems is the use of interface standards in the engineering and design of systems, coupled with the use of implementations (preferably, but not necessarily COTS and non-developmental items (NDI)) that conform to those interface standards. Generally, it is a flexible and adaptive system, which includes many products from many sources.

6.2.8 Operational Monitoring. Monitoring when the equipment or systems is being operated and/or is under power.

6.2.9 Preventative Maintenance Checks and Services (PMCS). PMCS includes assembly, disassembly, adjustments, maintenance, diagnose and repair or reporting of the condition of the system during the required system service life.

6.2.10 Special tools and test equipment. Special tools and test equipment are defined as not found in the U.S. Army's General Mechanics tool kit (NSN 5180-00-177-7033), Organizational Maintenance Common #1 tool kit (NSN 4910-00-754-0654), Common #2 tool kit (NSN 4910-00-754-0650), tool kit Supplement #1 (NSN 4910-00-754-0653), and U.S. Army Supply Catalog 4910-95-A73 and 4910-95-A74. The Sets, Kits and Outfits Supply Catalog and Technical Manuals can be found at the following websites: "<http://www.logsa.army.mil/pubs.html>" and <http://158.2.5.50/codebase/index.html>. These kits and other tool kits/sets (US Army) are managed by USAA TACOM-Rock Island, AMSTA-AC-CTTS, Rock Island, IL, 61299.

6.2.11 Static Monitoring. Monitoring when the equipment or system is not being operated.

6.3 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this publication.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2 and 2.3).
- c. When a first article is available for inspection and approval and the time frame for submission.
- d. When tools, special tools, and test equipment are required (see 3.5.3 and 3.5.4).
- e. Packaging requirement (see 5.).

6.4 Government furnished property. The contracting officer should arrange to furnish the property.

6.5 Government loaned property. The contracting officer should arrange to loan the property.

6.6 First article. The item to be tested should be an initial production system or selected from the first production lot. The first article should consist of a complete system type. The contracting officer should include specific instructions in acquisition documents regarding arrangements for Government furnished property, examinations, tests, approval, and disposal of the first article.

6.7 Data requirements. The contracting officer will include requirements for such data as technical publications, instructional materials, illustrated parts lists, and contractor's maintenance and operation manuals to be furnished with each system.

6.8 Drawings. The drawings listed in Table 3 can be helpful to a prospective bidder in understanding the interface requirements and compatibility of existing equipment. A prospective bidder may request the following drawings from the preparing activity, or directly from the contracting officer.

TABLE 3. <u>Drawings</u> .			
Item	Nomenclature	CAGEC	Drawing
1	TBD		

6.9 Abbreviations and acronyms.

ABS: American Bureau of Shipping

AQL: Acceptable quality limits.

AR: As required or Army Regulation.

ASTM: American Society for Testing and Materials

CI: Conformance inspection.

CoC: Certification of conformance.

CQT: Component qualification test.

CT: Comparison test.

FAT: First article test.

FATR: First article test report.

GCCS-M: Global Command and Control System - Maritime

GCSS-A: Global Combat Support System - Army

N/A: Not applicable.

PCO: Procuring contracting officer.

PD: Purchase description.

SALTS: Standard Automated Logistics Tool Set

SOW: Statement of work.

STAMIS: Standard Army Management Information Systems

T&D: Test and demonstration.

TAMMS: The Army Maintenance Management System

6.10 Subject term (key word) list.

Telelogistics
 GCSS-Army
 GCCS-Maritime
 STAMIS
 Watercraft

Preparing Activity:
 Army – AT

Table 1. LCU 2000 Sensor Quantity and Placement.

System	Sensors/Control Description	Total Sensors	Comments
	ENGINE SYSTEMS		
STBD Main Eng/ Port Main Engine	Lube Oil Pressure - Engine	2	
	Lube Oil Pressure - Differential	2	
	Starting Air Pressure	2	
	Fuel & deferential Pressure	4	
	Air Intake Pressure	2	
	Crank Case Pressure	2	
	Lube Oil Temperature	2	
	J/Water Temperature	2	
	Left Bank Exhaust Temperature	2	
	Right Bank Exhaust Temperature	2	
	Stack Temperature	2	
	Cylinder Temperature	32	16 cylinders x 2
	Engine Speed - RPM	2	
	Expansion Tank Level	2	
STBD Reduction Gear/ Port Reduction Gear	Lube Oil + Deferential Pressure	2	
	Lube Oil Temperature	2	

Ship's Service Diesel Generator #1 & #2	Lube Oil & deferential Pressure	4	
	Fuel & deferential Pressure	4	
	Air Intake Pressure	2	
	Lube Oil Temperature	2	
	J/Water Temperature	2	
	Stack Temperature	2	
	Engine Speed – RPM	2	
	Expansion Tank Level	2	
	Starting Air Pressure	1	(SSDG2 only)
	Crank Case Pressure	2	
Bowthruster Diesel Engine	Lube Oil & deferential Pressure	2	
	Fuel & deferential Pressure	2	
	Air Intake Pressure	1	
	Stack Temperature	1	
	J/Water Temperature	1	
	Fuel Tank Level Indicator	1	
	Crank Case Pressure	1	
Auxiliary Salt Water Pump/Motor	Salt Water Pressure – inboard strainer	1	
	Salt Water Temperature in + out	2	
	Motor Temperature	1	
	Salt Water Pressure – AC Skid	1	
Fire Main System	Strainer Pressure	1	
	Pump Suction Pressure	1	
	Pump Discharge	1	

	Pressure		
Propulsion Shafts	Cooling Water Pressure	2	
	Bearing Temperature	4	
	Speed - RPM	2	
Potable Water	PH Indicator	1	
	Turbidity - PPM	1	
	Pressure	1	
	Storage Tank Level Indicator	2	
Bilge Level	Bowthruster Room Level	1	
	TUNNEL LEVEL	1	
	STBD Engine Room Level	1	
	PORT Engine Room Level	1	
	STEERING RM LEVEL	1	
	Oily Water Separator	4	
Fuel System	Fuel Tank Level – Main	10	
	Parametric Filter Pressure	1	
Bilge/Ballast Pump	Outlet Pressure	1	
	Ballast Tank Level	7	2 tanks
EOS IN CONTROL	INDICATION	1	
Compressed Air	Air Receivers	2	
	Compressor Motor Temperatures	2	
Sludge + Dirty	Tank Levels	2	

oil tanks			
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Table 2. LSV Sensor Quantity and Placement.

System	Sensors/Control Description	Total Sensors	Comments
	ENGINE SYSTEMS		
STBD Main Eng/ Port Main Engine	Lube Oil Pressure - Engine	2	
	Lube Oil Pressure - Differential	2	
	Starting Air Pressure	2	
	Fuel + Differential Pressure	4	
	Air Intake Pressure	2	
	Crank Case Pressure	2	
	Lube Oil Temperature	2	
	J/Water Temperature	2	
	Left Bank Exhaust Temperature	2	
	Right Bank Exhaust Temperature	2	
	Stack Temperature	2	
	Cylinder Temperature	32	16 cylinders x 2
	Engine Speed - RPM	2	
	Expansion Tank Level	2	
STBD Reduction Gear/ Port Reduction Gear	Lube Oil + Differential Pressure	4	
	Lube Oil Temperature	2	
	Speed - RPM	2	
		2	
Ship's Service Diesel Generator #1 & #2	Lube Oil + Deferential Pressure	4	
	Fuel + Deferential Pressure	4	
	Air Intake Pressure	2	
	Lube Oil Temperature	2	
	J/Water Temperature	2	
	Stack Temperature	2	
	Engine Speed – RPM	2	
	Expansion Tank Level	2	

	Starting Air Pressure	1	(SSDG2 only)
	Crankcase Air Pressure	1	
Bowthruster Diesel Engine	Lube Oil + Deferential Pressure	2	
	Fuel + Deferential Pressure	2	
	Air Intake Pressure	1	
	Stack Temperature	1	
	J/Water Temperature	1	
	Fuel Tank Level Indicator	1	
	Crankcase Air Pressure	1	
Auxiliary Salt Water Pump/Motor	Salt Water Pressure – inboard strainer	1	
	Salt Water Temperature in + out	2	
	Motor Temperature	1	
	Salt Water Pressure – AC Skid	1	
Fire Main System	Strainer Pressure	1	
	Pump Suction Pressure	1	
	Pump Discharge Pressure	1	
Propulsion Shafts	Cooling Water Pressure	2	
	Bearing Temperature	4	
	Speed - RPM	2	
Potable Water	PH Indicator	1	
	Turbidity - PPM	1	
	Pressure	1	
	Storage Tank Level Indicator	1	
Bilge Level	Bowthruster Room Level	1	
	STBD Engine Room Level	1	
	PORT Engine Room Level	1	
	STEERING RM LEVEL	1	
	Oily Water Separator	4	

Fuel System	Fuel Tank Level – Main	6	
	Parametric Filter Pressure	1	
	Settling + Day tanks	2	
Bilge/Ballast Pump	Outlet Pressure	1	
	Ballast Tank Level	6	6 tanks
Compressed Air	Air Receivers	2	
	Compressor Motor Temperatures	2	
EOS IN CONTROL	INDICATION	1	

Table 3. LT Sensor Quantity and Placement.

System	Sensors/Control Description	Total Sensors	Comments
	ENGINE SYSTEMS		
STBD Main Eng/ Port Main Engine	Lube Oil Pressure - Engine	2	
	Lube Oil Pressure - Differential	2	
	Starting Air Pressure	2	
	Fuel + Deferential Pressure	4	
	Air Intake Pressure	2	
	Crank Case Pressure	2	
	Lube Oil Temperature	2	
	J/Water Temperature	2	
	Left Bank Exhaust Temperature	2	
	Right Bank Exhaust Temperature	2	
	Stack Temperature	2	
	Cylinder Temperature	32	16 cylinders x 2
	Engine Speed - RPM	2	
	EXP Tank Level	2	
STBD Reduction Gear/ Port Reduction Gear	Lube Oil + Deferential Pressure	4	
	Lube Oil Temperature	2	
	Engine Speed - RPM	2	
Ship's Service Diesel Generator #1 & #2	Lube Oil + Deferential Pressure	4	
	Fuel + Deferential Pressure	4	
	Air Intake Pressure	2	
	Lube Oil Temperature	2	
	J/Water Temperature	2	
	Stack Temperature	2	
	Engine Speed – RPM	2	
	EXP Tank Level	2	

	Starting Air Pressure	1	(SSDG2 only)
	Crankcase Air Pressure	1	
Bowthruster Diesel Engine	Lube Oil Pressure	1	
	Fuel Pressure	1	
	Air Intake Pressure	1	
	Stack Temperature	1	
	J/Water Temperature	1	
	Fuel Tank Level Indicator	1	
	Crankcase Air Pressure	1	
Auxiliary Salt Water Pump/Motor	Salt Water Pressure – inboard strainer	1	
	Salt Water Temperature in + out	2	
	Motor Temperature	1	
	Salt Water Pressure – AC Skid	1	
Fire Main System	Strainer Pressure	1	
	Pump Suction Pressure	1	
	Pump Discharge Pressure	1	
Propulsion Shafts	Cooling Water Pressure	2	
	Bearing Temperature	4	
	Speed - RPM	2	
Potable Water	PH Indicator	1	
	Turbidity - PPM	1	
	Pressure	1	
	Storage Tank Level Indicator	1	
Bilge Level	Bowthruster Room Level	1	
	TUNNEL LEVEL	1	
	STBD Engine Room Level	1	
	PORT Engine Room Level	1	

	STEERING RM LEVEL	1	
	Oily Water Separator	4	
Fuel System	Fuel Tank Level – Main	1	
	Parametric Filter Pressure	1	
Bilge/Ballast Pump	Outlet Pressure	1	
	Ballast Tank Level	2	2 tanks
Hydrodrive	Pressure	1	
EOS IN CONTROL	INDICATION	1	
Compressed Air	Air Receivers	2	
	Compressor Motor Temperatures	2	

Table 4. LAN Drops.

Space Name	Workstation Type	LCU	LSV	LT	Comments
	(Connection Type)				
Engine Operation Station	Fixed Workstation (permanent)	1	1	1	
Chief Quarters	Portable (wireless w/dock station)	1	1	1	With additional monitor and keyboard
Skipper Quarters	Fixed Workstation (permanent)	1	1	1	
Bridge	Fixed Workstation (permanent)	1	1	1	
Officers Mess	Portable (wireless)	1	1	1	Galley for LCU
Engineer's Office	Fixed Workstation (permanent)	N/A	1	1	
Engineer's Office	Data Storage Device (permanent)	1	1	1	LCU – Location TBD
Engine Room	Portable (wireless)	1	1	1	

Table 5. Workstation Types.

Space Name	Workstation Type	LCU	LSV	LT	Comments
	(Connection Type)				
Fixed Workstation	CPU, Monitor, KYBD, Mouse, printer	3	4	4	
Laptop w/dock station	CPU, Monitor, KYBD, Mouse	1	1	1	
Portable	CPU, wireless	2	2	2	
Data Storage Device		1	1	1	